3.6 RELIABILITY AND SAFETY

3.6.1 Applicable Sections in FERC Documents

Please refer to Section 3.13 in the FERC Final EIS and Resource Report 11, Reliability and Safety, in Exhibit F-1 of GSX-US's original application to FERC.

3.6.2 Issue 25: Pipeline Protection Measures~~1~~

Issue Summary

Description of Problem

Pipeline protection measures need further discussion and clarification; emergency situation delay response time information is not adequate.

Ecology Requirement

Overall, protection measures need to be more specifically addressed. Discussion regarding management of the gas from valve to valve during an emergency is needed. Because of the history of pipeline safety in the region, protection and safety are issues of concern that need to be more fully addressed.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

Impacts of proposed project would not occur.

Mitigation Measures

Proposed Action

GSX-US

The GSX-US pipeline would be designed, constructed, operated, and maintained in accordance with the federal Department of Transportation's *Minimum Federal Safety Standards* (49 CFR 192), which is the federal safety standard used in the transportation of natural gas. The following sections contain additional information to address the specific safety-related concerns expressed by Ecology.

Leak Detection: Leak detection is typically accomplished on natural gas transmission pipeline systems using a combination of regular ground and aerial surveillance, continuous monitoring of system flow parameters, and communications with landowners and tenants. These methods are considered to be sufficient under normal conditions. The unique characteristics of the marine pipeline portion of the GSX-US project present challenges that may not be adequately addressed by a normal application of these conventional leak detection methods. GSX-US is in the preliminary phases of designing a supervisory control and data acquisition (SCADA)-based leak detection system that would address some of the unique characteristics of the marine pipeline and would ultimately provide an increased level of safety and reliability.

The SCADA leak detection system would be based on a computer program that would continuously monitor the gas pressure, temperature, and volume of the system. The program would compare the actual pipeline throughput under current operating conditions with the throughput calculated by a system simulator. If the difference between the actual system throughput and the calculated system throughput exceeds a certain threshold, the program signals the discrepancy and further analysis would be required. It would then be necessary to determine if the cause of the imbalance is due to an actual leak or possibly other causes such as inaccurate transmitters or fluctuations in line conditions.

The system would be designed based on the specific parameters of the GSX-US pipeline with a minimum design detection limit of 10% loss of throughput in a 24-hour period. The system would be designed and initially installed using thresholds and parameters based on computer simulations. However, the actual system parameters would be finalized after the pipeline is in service and the system has been adjusted for actual operating conditions. Response times would depend on a number of factors related not only to the design of the system, but also to the nature of the situation. For example, very small leaks would be detected and identified over a greater time period than would larger leaks. The system would be designed such that larger leaks would be identified very quickly. If a leak were detected, system flow could be stopped immediately by remote operators from the gas control center or by local operations personnel.

The preliminary design suggests that the smallest leak that could be identified by the proposed leak detection system would be about a 1-inch-diameter hole on the U.S. onshore pipeline or about a 1/8-inch-diameter hole on the marine pipeline (difference is due to higher pressures on marine pipeline), either case being equal to about 1% of the total throughput of the GSX-US system.

The leak detection system would be monitored 24 hours a day, 7 days a week, 365 days a year at the gas control center in Salt Lake City, Utah. The system would provide continuous information to the control center operators, and would have appropriate threshold and alarm values set such that warnings would be provided to the operators when critical parameters are exceeded.

Many other parameters on the GSX-US system (separate from the leak detection system) also would be monitored by the control center and by field personnel that would assist in the evaluation of system changes and potential leaks. For instance, if a major disruption in flow occurred, it would be identified almost immediately in the control center through monitoring systems separate from the leak detection system.

<u>Integrity Evaluation</u>: The GSX pipeline would apply a Risk Management Process (RMP) as part of a systematic and comprehensive Integrity Management Plan to reduce the risk of pipeline failure and the resulting consequences related to a failure. The process would integrate information from various sources such as a geographic information system (GIS), cathodic protection data, and in-line inspections to better identify and analyze the threats to the integrity of the pipeline. Through a formal and detailed ranking process, projects and activities would be identified to mitigate potential system integrity threats, thereby reducing the likelihood of failure. In addition, the RMP would examine the consequence of potential releases and explore opportunities to minimize impacts on public safety, health, business, and the environment.

The process would also include the use of an Integrity Assessment Program (IAP) that includes a database of all risk factors to the pipeline. The data would include soil data, depth of cover, geologic hazards, pipe data, appurtenance data, operating data, third party damage factors, and population density. The program would analyze the data to determine risk levels for different segments of the system. This information would be used to assist in determining appropriate maintenance activities, areas that require additional measures, or other integrity evaluation activities. This program would assist in determining appropriate intervals for internal inspections, close interval surveys, and other monitoring.

<u>Check Valves</u>: Check valves are devices used in pipelines for restricting flow to one direction. They are most often used at locations where pipelines connect to another pipeline (either a supply source or a delivery point) known as “interconnections.” On the GSX-US pipeline, check valves are proposed at interconnections. Check valves used elsewhere along the pipeline would add no real value and would not increase the safety or reliability of the system. There are three proposed interconnections on the GSX-US system. Two proposed interconnections, one to the existing Westcoast system and one to the existing Northwest Pipeline system, are located at Sumas, Wash. A check valve would be installed at both interconnects. The check valve would only allow gas flow into the GSX-US system and would prevent the backflow of gas from GSX-US into either the Westcoast or the Northwest system. The third interconnection would be located on Vancouver Island to connect GSX-US with the TGVI pipeline. A check valve would be installed at the Terasen Gas interconnection and would only allow gas flow from the GSX-US

pipeline to the Terasen Gas system and would prevent backflow. Check valves are used for operational and business-related reasons rather than for safety.

Mainline Valves: Mainline block valves are proposed on the GSX-US pipeline in six locations as follows:

- MP 0.0 (Sumas interconnection site)
- MP 7.6
- MP 15.1
- MP 19.8
- MP 26.3
- MP 32 (Cherry Point compression site)

These valves would be used to stop the flow of gas and to isolate smaller sections of the pipeline. With the exception of the valves at Cherry Point and Sumas, local operations personnel must physically operate the valves. The valves at Cherry Point and Sumas could be closed by remote operators from the gas control center in Salt Lake City or by local operations personnel.

In addition to the valves listed, three valves exist in Canada, including one immediately downstream of where the pipeline comes onshore onto Vancouver Island. This valve could be remotely closed from the gas control center, and along with the valve at Cherry Point would allow the isolation (remote if necessary) of the entire marine section of the pipeline. Spacing between the valves would conform to Class 3 criteria even though the entire GSX-US route is Class 1 or Class 2 at this time.

All mainline block valves would be equipped with blowdowns on both sides of the valve. The blowdowns consist of an aboveground riser or pipe segment and a valve. In case of emergency or for certain maintenance activities, the appropriate pipeline segment could be isolated by closing the nearest valve on both ends of the segment. Any remaining gas would then be safely vented to the atmosphere through the blowdowns.

Staff Training: Williams Pipeline personnel at the Sumas, Washington, district office would operate and maintain the U.S. portion of GSX. While additional personnel may need to be added to cover the additional work, existing staff would be involved in the critical aspects of operating and maintaining the GSX-US system. Williams Pipeline would follow the training as outlined in its existing Operations and Maintenance Manual. Employees would be trained based on work activities. Employees must also pass operator qualifications for core competency skills. Refresher training would be conducted as needed. Employees would participate in health and safety training during district employee meetings. The training employees receive would be documented in a computer-based management system.

Third-Party Damage Prevention: Williams Pipeline performs numerous activities and uses a variety of tools to protect its assets and the public from third-party damage. Those activities include the following:

- Weekly aerial surveys, weather permitting, to view any activity along the right-of-way.
- Flyers, letters, brochures, and documents sent to landowners to remind them of the pipeline and its location and to notify Williams Pipeline Company of any activity along the right-of-way.
- Public education policy and procedure.
- Mutual assistance with local public officials and related operators.
- Policy and procedure to protect facilities from vandalism, terrorists, criminal activity, and similar threats.
- Continuing documented surveillance to monitor changes in class location.
- Leak surveys (without leak detection equipment) at intervals not exceeding 15 months, but at least once each calendar year.
- Leak surveys (with leak detection equipment) in Class 3 locations at intervals not exceeding 7.5 months, but at least twice each calendar year.
- Installing and maintaining line markers.
- Keeping right-of-way cleared and visible.

<u>Washington Utilities and Transportation Commission Issues (Comments on Draft EIS)</u>: The Washington Utilities and Transportation Commission (WUTC) serves as an agent for the Department of Transportation's Office of Pipeline Safety (OPS) primarily to inspect pipelines for compliance with 49 CFR 192. In letters from the OPS to FERC and from the WUTC to FERC, it was made clear that the WUTC's comments on the Draft EIS were made in the commission's role as an intervenor and not as an agent for the OPS. It is worth noting, as pointed out by the OPS, that several of the technical comments contained in the WUTC correspondence address matters that vary from the requirements of the applicable portions of 49 CFR 192.

As requested by Ecology, GSX-US is providing the following information to assist in understanding and/or clarifying the issues raised by the WUTC as they relate to federal safety standards. WUTC comments on the Draft EIS and the FERC's responses to those are contained in Appendix O of the Final EIS.

- The WUTC recommends the GSX-US pipeline be odorized for public safety. As mentioned in the FERC's comments to the WUTC (Final EIS Appendix O, SA1-2), there is no Department of Transportation requirement to odorize an interstate transmission pipeline in Class 1 or Class 2 locations. As previously discussed, GSX-US would install a leak detection system and would conduct leakage surveys on a regular basis.
- The WUTC recommends the following: (1) Prior to commissioning of the pipeline, provide an internal inspection survey (smart pig) to identify construction anomalies and establish a baseline for future evaluations; (2) Future smart pig internal inspections should be done at approximately 5-year intervals to identify wall loss from corrosion and third-party excavation damage; (3) A schedule should be established for excavating anomalies that require field inspection and remediation defects that require repair; and (4) Use the data obtained from the internal inspection to perform a risk integrity assessment of the pipeline to determine the appropriate frequency of internal inspections. See the FERC's response to the WUTC (Final EIS Appendix O, SA1-5) and the discussion above under the heading "Integrity Evaluation." GSX-US is also proposing to run an in-line inspection caliper pig to identify any construction anomalies and serve as a baseline for future reference.

GSX-Canada

In case of emergency, GSX-Canada would invoke its Emergency Preparedness and Response Program (EPR). GSX-Canada stated that its EPR would fulfill the requirements of the NEB and the U.S. Occupational Safety and Health Act. The EPR would include the following components:

- Program Development (Hazard Assessment)
- Emergency Procedures Manual
- Liaison Program (First Responders)
- Continuing Public Education Program
- Emergency Response Training
- Emergency Response Exercises
- Incident and Response Evaluation
- Emergency Response Equipment

In its July 2003 ruling, the Joint Review Panel concluded that GSX-Canada had taken an acceptable approach in identifying and assessing hazards associated with the project. The panel further concluded that GSX-Canada had designed the terrestrial section of the pipeline for a Class 3 designation, which meets or exceeds the requirements of current regulations. With these mitigation measures in place, the panel concluded that significant adverse environmental impacts from accidents and malfunctions would be unlikely.

<u>Terasen Gas Alternative</u>

Public safety at compressor stations will be ensured by fully enclosing these areas with a fence. In addition, construction will be in compliance with all building codes and will have the benefit of current safety practices. Each station will be remotely controlled with state of the art emergency reporting and shutdown equipment and will be monitored 24 hours per day from the Terasen Gas control center in Surrey, BC. TGVI has emergency response procedures to effectively deal with emergencies related to compressor facilities and the pipeline.

LNG facilities have a proven public safety record. No LNG accidents have affected the general public in North America in the last 55 years. Hundreds of such facilities, constructed to rigorous design codes, are safely operating in North America and elsewhere in the world. Terasen Gas's existing Tilbury LNG facility has operated safely without incident since being placed into operation in 1970.

<u>No Action Alternative</u>

All of the NorskeCanada mills have strong safety records focusing on prevention and planning. Appropriate management will be exercised around the operation of the cogeneration facility, the aqueous ammonia storage facilities, and the natural gas supply. Dedicated mill emergency response teams are currently trained in the handling of problems related to this type of infrastructure.

Significant Unavoidable Adverse Impacts

No additional analysis required.